ENGINEERING ANALYSIS
GE Appliances - Decatur Operations
712-0025

On April 7, 2010, the Department received an application from the General Electric Company Decatur Plant Operations for a Synthetic Minor Operating Permit. This GE facility produces refrigerators. Foam insulation is blown into the refrigerator cabinets to provide insulation. GE is applying for a SMOP because a proposed change in the foam blowing agent used on two existing refrigerator lines will increase this facility's emissions of Volatile Organic Compounds. The proposed change would include the installation of three tanks along with new piping and pumps. The tanks would be a 12,000 gallon blowing agent storage tank, a 6,000 gallon mix tank, and a 250 gallon weigh tank. These tanks will be pressurized and will not normally have air emissions. Standby ventilation may be added for an emergency shutdown of this system. A new emergency generator would also be part of this system. The production capacity of this facility would not change. Air emissions are fugitive, and will be carried out of the building through the ventilation system. Details of the emissions points in the ventilation system were not included with the application.

**Background**

This facility holds Air Permits for two 8.4 MMBTU/hr natural gas boilers. The Air Division determined in 2004 and 2009 that changes to the operation of this refrigerator production facility would not require a permit.

**Emissions**

Potential air emissions from this facility were estimated to be 65 tons per year of Volatile Organic Compounds in 2009. The proposed change in blowing agents would increase potential VOC emissions from this facility to 109 tons per year. GE is currently using HFC-134a as a blowing agent for the polyurethane foam insulation in the refrigerator cabinets and doors. This facility has applied to modify the existing production lines to use cyclopentane as the blowing agent. Emissions from the polyurethane foam were estimated using a 2.6% emission factor. This emission factor is based on a test conducted by the chemical supplier. GE plans to conduct emissions tests during a production trial at the Dothan facility. GE has requested a Synthetic Minor Operating Permit which would limit VOC emissions below the 100 tons per year major source threshold. VOCs are also emitted from vanishing oil used when forming metal components of the refrigerators and from sealers and other chemicals used at this facility. The steel used to form the exterior of the refrigerator cabinets is painted before being shipped to the GE facility. Potential emissions of Hazardous Air Pollutants were estimated to be 11 tons per year. Potential emissions of styrene, the greatest single Hazardous Air Pollutant, were estimated to be 6 tons per year. The styrene, along with other HAP and VOC, is emitted from the extrusion and molding of acylonitrile butadiene styrene, polypropylene, and polystyrene components used inside the refrigerator. The proposed Synthetic Minor Operating Permit would limit emissions to 99 tons per year of VOC.

NOx, PM, and CO are emitted from the natural gas boilers, ovens, and heaters at this facility. GE Decatur is not a potential major source of these pollutants. Baghouses are used in several pneumatic

material handling systems at this facility. None of these are considered to be significant sources of particulate emissions.

**PSD**

This facility will continue to be a minor source for PSD.

**NSPS/MACT**

This facility is currently subject to 40 CFR 63 subpart ZZZZ, the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines because it has an existing emergency generator. The proposed new emergency generator would be subject to 40 CFR 60 subpart JJJJ, the Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. No other NSPS or MACT standards would apply to the operations at this facility.

**Title V**

This facility is a synthetic minor source with respect to Title V.

**Public Notice**

The proposed SMOP would require a 15 day public comment period.

**Recommendations**

Since it appears that this trial would not change this facility's ability to meet all applicable state and federal regulations, I recommend issuing the attached draft permit following the required public comment period.

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April 28, 2010
Date